

Methods of Measuring Strategic Costs

Strategic costs can never be measured with the precision and accuracy implied by the foregoing discussion. Measures must, of course, be tailored to fit existing economic data. Two kinds of information can be used, although both are not always applicable to every economy: the first is money costs of production; the second, resource costs. In an economy in which the price system plays a significant role in allocating resources among their many alternative uses, money costs are simply a generalized expression of resource costs.<sup>1/</sup>

The calculation of strategic costs in either terms must proceed through several steps. The most convenient starting point is to calculate the rate of costs after all desired and possible rearrangements of resources have been made. We can think of this as the basic estimate of costs. Although the basic estimate obviously gives only part of the story, use of it in the initial stages of measuring costs is desirable because it can be subsequently adjusted to reflect any set of circumstances in the transitional period that might be dictated by the strategic situation.

Let us consider first the procedure for calculating the strategic costs to the West, in monetary terms, of trade <sup>severance</sup>. The basic estimate of annual economic costs would be the annual cost to the West of producing all former imports, or equivalent substitutes, minus the annual cost to the West of producing all former exports. The latter cost is approximated by the value of Western exports at the time that trade is severed. The former cost is much more difficult to come by. If imports are also produced somewhere in the West, a first approximation to costs is the value of imports, though this figure will

<sup>1/</sup> That is, within technical limits resources can be substituted for each other without reducing output at about the rate represented by their relative prices.

clearly understate the costs that would obtain in the absence of trade<sup>2</sup> and must therefore be adjusted upward on the basis of such technical and economic information on internal costs of production as can be found. For imports that have not been also produced domestically, the estimate of costs of producing them or equivalent substitutes must be constructed from scratch.

Annual strategic costs will be that part of annual economic costs that can not be offset by diverting resources from civilian consumption, i.e., by civilian fat. In order to get at strategic costs to the West, therefore, it is necessary to estimate the value of all resources used in the civilian sector and the value of those resources required to support the population at an irreducible level of consumption. The most feasible approach is to telescope the two estimates into one: the amount by which civilian goods and services can be reduced without seriously affecting morale and/or productivity.

The strategic costs derived in the above manner represent the rate of costs that would be expected to prevail after a reasonably long adjustment period. It is clear that they understate the rate of costs during the adjustment period, but, as pointed out earlier, certainly not to the extent suggested by most "bottleneck" theories. The important factors to be considered here are the size of strategic stockpiles, the extent of other built-in shock absorption (e.g., developmental fat), and the rate at which resources can be shifted from export industries and the "surplus" civilian economy. In general, the shorter the adjustment period, the larger will be the difference between actual annual strategic costs and the basic estimate. It may indeed be quite impossible to make any quantitative calculation of the difference. It may be possible to make only a very broad statement, such as: average

annual strategic costs over a five year adjustment period could be expected to be roughly 125% to 150% of the average annual costs over a ten year adjustment period.

The final problem in measuring strategic costs is the estimation of aggregate costs over the critical strategic period. If the entire critical period, including the time allowed for productive adjustment, is reasonably short (e.g., less than fifteen years), minimum aggregate costs will be the sum of the annual costs over the period. If the critical period is long (e.g., more than fifteen years), minimum aggregate costs will be <sup>the cost of a</sup> net investment program designed to increasing productive capacity of the economy sufficiently to replace all lost imports. The cost of such a program is twofold: first, the cost of capital formation itself, including training of labor; second, the strategic cost incurred during the investment period.<sup>1/</sup> The longer the critical strategic period, the less important it becomes to include the second factor in calculation of aggregate costs.

The foregoing reasoning applies step by step to calculation of strategic costs in terms of specific resources. Instead of calculating costs in monetary terms, they are calculated in terms of specified quantities of specified

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<sup>1/</sup> The costs of capital formation are, of course, exclusive of total value of resources transferred from export industries or the "surplus" civilian economy. If we can assume that resources have been rationally allocated, one method of computing the construction costs would be to capitalize "eventual" annual strategic costs (i.e., more that would prevail after all productive adjustments had been made) at the net productivity rate of capital. For instance, if eventual annual strategic costs were \$12,000,000 and the productivity rate of capital were 6%, the cost of capital required to replace lost imports would be \$200,000,000. The strategic costs incurred during the investment period are the net costs caused by loss of imports during the investment period, exclusive of costs of capital construction.

resources used in the production of imports, exports, consumer goods, or capital. For instance, the cost of producing an import (e.g., steel) would be taken as the quantities of resources used in the production of steel (e.g., coal, labor, iron ore). Except for this difference, the procedure is the same. It should be pointed out, however, that data on resource costs are almost certain to be fragmentary and incomplete, much more so than money cost data in economies in which both can be found.

One important problem has been skirted in the discussion to this point, namely, the problem of measuring strategic costs in the Soviet Bloc and in the West so that they are comparable. There is no single best solution to this problem, suitable for all purposes. The nature of the comparability problem is determined by what we are looking for. For instance, we may wish to know merely the direction, but not the degree, of change in strategic welfare for both sides. If the ratio of war-making capabilities is considered a good index of strategic welfare, then an increase in strategic welfare for the West, and a decrease for the Bloc, is indicated if strategic costs are a smaller fraction of war-making capabilities for the West than for the Bloc. In this case there is no problem of comparability of measurement as between the West and the Bloc. If, on the other hand, we wish to know the degree of change in the ratio of, or in this difference between, war-making capabilities of the West and the Bloc, the problem of comparability enters immediately. Money costs can, of course, be translated into a common measure by using an appropriate exchange rate.<sup>1/</sup> Resource costs for the Bloc and of the West cannot be directly compared. Hence, to some extent, the problem of comparability cannot be solved.

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<sup>1/</sup> There are many problems associated with choosing the right exchange rate, but these cannot be discussed within this paper.

Analysis of Costs to the East and West

All of the discussion up to this point has avoided reference to specific factors in the East and West that might shape the patterns of reaction to restrictions of trade. In order to say anything about these factors, we must first know what areas are included in East and West, and how significant their trade is. For purposes of a general study of East-West trade, it seems best to divide the world between the two parts, the East including the entire Soviet Bloc/ and the West including the rest of the world. Trade each way in 1950 amounted to about \$1.5 billion. This figure may be compared with a gross national product of about \$125 billion in the Soviet Bloc and well over \$500 billion in the rest of the world. Placed in this perspective, severance of trade would not seem to pose a sizable problem for either the East or West. The comparison of trade and GNP is useful primarily as an indication of the long-run problem created by severance of trade. Such a comparison sheds little light on the strategic importance of trade in the immediate future or even the moderately long run.

Since the size of the economy, the extent of diversification, and the store of technical knowledge are all much larger in the West than in the Bloc, it seems quite likely that, political considerations aside, the ultimate cost of trade restriction would be greater in the Bloc. Through trade the Bloc has enjoyed the use of highly specialized capital equipment, highly skilled labor, and complex technical know-how that are all exceedingly scarce inside the Bloc. By copying one prototype machine the Bloc is now able to tap literally scores of years of technical, engineering, and industrial research experience. It would be very costly for the Bloc to be forced to duplicate

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/ USSR, European Satellites, and Asiatic Satellites.

the experience within a relatively short span of time instead of being allowed to purchase the proven fruits of experiences. On the other side, the West has a much broader base of industrial activity and know-how to draw upon in replacing lost imports. Moreover, the bulk of imports into the West are "basic" rather than highly processed commodities. As far as economic factors are concerned, the West is in a much better position than the East to provide for "self-sufficiency."

Although the Bloc might be hurt more than the West in the long-run, it is not at all certain that the impact would be felt as quickly in the Bloc. The USSR has long been oriented toward continuing warfare and has presumably built substantial shock absorption into its economy. Probably as much as five percent of Soviet national income has been devoted to industrial reserves in each postwar year, and a large portion of those reserves is undoubtedly set aside for strategic stockpiles. Soviet planning probably has not only anticipated a severance of trade but also looked upon ultimate severance as desirable. In fact Soviet trading policy could quite reasonably be characterized as trading for the purpose of eventually severing trade. At the same time it would be a serious mistake to suppose that the West is wholly unprepared to cushion the blow of trade severance. It too has had a stockpiling program, at least over the last year and a half. Even more important is the inherent diversification and organizational flexibility in the principal economies of the West that can serve to soften the blow. As between the East and West, there is little question that the organizational mechanism of the Western economy, primarily the market pricing system, is much more efficient in quickly diffusing the shock of disturbances to less important sectors of the economy.



As far as strategic warfare is concerned, it would seem that the West would rather clearly gain from severance of trade. There is little evidence to suggest that the Bloc has any significant amount of civilian fat. The civilian economy probably has already been squeezed to the limit feasible under cold war conditions. Hence loss of imports is certain to improve strategic costs. The same criterion does not hold for the West. It is highly likely that civilian fat could absorb the entire cost of trade restriction. If the depth of civilian fat amounted to only one percent of the gross output of the West, five billion dollars worth of resources would be available for replacing lost imports (presently valued at less than a third of that amount) without inflicting strategic costs. It would therefore appear, without any further study, that the West has everything to gain and nothing to lose by severing East-West trade.

The answer is, however, not quite so simple. We have overlooked the fact that, if the West were willing to accept a reduction in civilian consumption after trade severance (imposed by the West), then it should also be equally willing to accept the same reduction while trade is going on and to shift released resources to the war economy. Trade severance will improve the strategic welfare of the West only if the resulting decline in war-making capabilities of the East outweighs the increase in war-making capabilities of the West that could be achieved without trade restrictions but with a reduction in civilian consumption of the West equivalent to that which would be imposed by trade restrictions. We have also overlooked the fact that large portions of the West might not be willing to suffer the necessary reduction in living standards in order to improve their strategic welfare. The price the West must pay, in terms of reduced living standards, will play a large part in determining how much strategic welfare it will be

willing to "buy" through restricting East-West trade. For both reasons, the advisability of the West taking the initiative in further restricting trade can be ascertained only after probable costs, strategic and other, to both sides have been carefully assessed.

One cost that is frequently forgotten is the cost of enforcing trade restrictions. This cost must be borne exclusively by the West and includes resources required to police trade channels, to gather information on illicit trade, to administer control devices, to formulate policies, and so on.<sup>1/</sup> It is entirely possible that such costs might eat away a substantial portion of the strategic gain.

One final problem plagues analysis of relative costs to the East and West: the vast difference in the role of the price system. Money costs in the West do reflect actual resource costs with reasonable accuracy; they do

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<sup>1/</sup> It might appear that the costs of a tight policing policy would be partly offset by the premium prices received by Western traders for smuggled exports. Such offsets are however illusory for at least two reasons. First, the smuggling need not be in both directions. If no goods move into the West while goods move out, it is clearly worse off regardless of the size of black market (money) profits of its traders. Secondly, bilateral smuggling could improve the position of the West only if the shift in terms of trade were drastically in its favor and the amount of smuggling were substantial. If these conditions hold, the West would be better off by relaxing rather than stiffening trade controls. That is, the West had made a mistake by restricting trade too much.



not do so in the East. At least we know very little about the relation between price and actual cost. We have scarcely any alternative for the Soviet Bloc other than measuring costs in terms of specific quantities of specific resources. We cannot directly compare strategic costs in the two areas, since there is no way of translating the resource costs in the Soviet Bloc into equivalent costs in the West. The measure of relative damage we come up with is therefore the money cost that the West must bear in order to inflict resource costs on the Bloc.

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